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EXAMINER	
BROOME, SAID A	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/693,231	KAKE ET AL.	
	Examiner	Art Unit	
	SAID BROOME	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,17,22 and 24-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-14,27,29,31,33,35 and 40* is/are allowed.

6)☒ Claim(s) *17,22,24-26,28,32,34,36-39 and 41* is/are rejected.

7)☒ Claim(s) *30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to an amendment filed on 7/30/2009.
2. Claims 1, 22, 24 and 41 have been amended by the applicant.
3. Claims 2-14 and 25-40 are original.
4. Claims 15-21, 23 and 42 have been cancelled.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22 and 24 recite the limitation "the frame" in lines 11 and 10 respectively, however claims 22 and 24 do not provide prior recitation of "the frame" that results from the last limitation to the respective claims. Therefore, there is insufficient antecedent basis for this limitation in the claims.

Allowable Subject Matter

In regards to claim 30, Seki and Fels do not teach that the attribute value is a value that indicates the order of approximation relative to a desired image pattern, therefore claim 30 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-14, 27, 29, 31, 33, 35 and 40 are allowed. The following is an examiner's statement of reasons for allowance:

The prior art, Seki (JP 09-035040), does not teach the limitations of claim 1. In regards to claim 1, the prior art fails to teach projecting a first image that appears on the cut surface onto a first plane perpendicular to the time axis, varying the cut surface in time, projecting a second image that appears on the varied cut surface onto a second plane perpendicular to the time axis, and outputting the first and second images appearing on the first and second planes as new moving pictures, therefore claims 1-3 are allowable.

The prior art, Seki (JP 09-035040), does not teach the limitations of claim 4. In regards to claim 4, the prior art fails to teach projecting a first image that appears on the cut surface onto a first plane perpendicular to the time axis, projecting a second image that appears on the varied cut surface onto a second plane perpendicular to the time axis, and outputting the first and second images appearing on the first and second planes as new moving pictures, therefore claims 4-14, 27, 29, 31, 33 and 35 are allowable.

The prior art, Seki (JP 09-035040), does not teach the limitations of claim 40. In regards to claim 40, the prior art fails to teach projecting a first image that appears on the cut surface onto a first plane perpendicular to the time axis, projecting a second image that appears on the varied cut surface onto a second plane perpendicular to the time axis, and outputting the first and second images appearing on the first and second planes as new moving pictures, therefore claim 40 is allowable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 22, 24-26, 28, 32, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki (JP 09-035040) in view of Yamamoto et al. (hereinafter "Yamamoto", US Patent 6,556,210).

Regarding claims 22 and 24, Seki teaches an image generating apparatus which includes an image memory, an image conversion unit and an image data output unit (¶0011 lines 1-3: "*…a camcorder is used to take the consecutive images that are input to an image processor…as shown in Figure 1, as the images…are represented…*", *in which an image pickup apparatus enables captured images, thereby stored on memory within the apparatus, to enable image display conversion processing enabling the images to be output, as recited in claims 22 and 24*), and a computer readable medium encoded with a computer program (¶0011 lines 1-3: "*…a camcorder is used to take the consecutive images that are input to an image processor…as shown in Figure 1, as the images…are represented…*", *Fig. 4, stores a program to execute the image generation, Fig. 4, as recited in the preamble of claim 41*),

wherein said image memory (¶0011 lines 1-2: "*As shown in Fig. 1, for example, a camcorder is used to take the consecutive images that are input to an image processor.*", *in which the images are collected by an image pickup device and are thereby stored in an image memory, as disclosed in claims 22 and 24*), records, in sequence, original moving pictures for each frame, wherein said image conversion unit determines, for each in-picture position of an image contained in a target frame (¶0012 lines 1-2 and 8-11: "*On said cross-sectional image C(d, t; θ), a portion of the image of moving object (21) contained in the original consecutive*

images must appear as the trace…this trace cross-sectional image $L(s, \theta; t)$ is an image obtained by cutting said time-space image $I(x, y; t)$ with a helix plane along the movement direction of the object. This plane completely contains the information pertaining to the movement of the object…", *wherein for the successive frames, the position of an object in image is tracked, Fig. 4*), a plurality of frames at predetermined time intervals from the frames recorded in said image memory (¶0013 lines 1-2: "*…all of the consecutive images within a prescribed time are obtained beforehand.*", *where fames are captured over a predetermined time interval, that enables the time intervals between the frames to be predetermined, Fig. 2*),

wherein said image conversion unit reads out, from the plurality of frames, data that correspond to the in-picture position and synthesizes the data according to an attribute value (¶0012 lines 1-2 and 6-11: "*...a portion of the image of moving object (21) contained in the original consecutive images must appear as the trace…This is called trace cross-sectional image $L(s, \theta; t)$, and it is found that this image becomes a place containing the velocity vector of the moving object…This plane completely contains the information pertaining to the movement of the object…*", *where a certain region from all the frames is captured, as shown in Fig. 4, where an attribute value, such as the proportional difference in the position of the object over time, is tracked and presented in a synthesized image that displays the movement of the object over a time interval, Fig. 5*), and

wherein said image data output unit sequentially outputs the synthesized and reconstructed image data along a time axis (¶0015 lines 1-5: "*When there are plural moving objects in the cross-sectional images, plural groups of the cross-sectional images are prepared corresponding to the respective objects, to get the trace cross-sectional image for each object.*"

and ¶0012 lines 1-2 and 8-11: "*On said cross-sectional image C(d, t; θ), a portion of the image of moving object (21) contained in the original consecutive images must appear as…an image obtained by cutting said time-space image I(x, y; t)…This plane completely contains the information pertaining to the movement of the object…" and is illustrated in Fig. 3: axis T, in which output of several synthesized images is provided to enable a user to animate the movement of several objects in a sequence of images across the time axis T through generation of several synthesized images for each group that corresponds to an object in sequence of images, whereby a special effect may then be visualized showing the movement of several objects present in the sequence of images*).

However, Seki fails to teach synthesizing data at an alpha value. Yamamoto teaches synthesizing data at an alpha value (col. 17 lines 14-16: "*…the first image 201 and generated second image 202 are synthesized using the value α to produce a third image…*"). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the plurality of images provided by Seki with the alpha value synthesis of Yamamoto because this modification would ensure acute synthesized images are du through utilizing the alpha value in each of the images during synthesis thereby reducing visual discontinues or errors through correctly merging the images in response to a common alpha value to preserve the integrity of he image after synthesis.

Regarding claim 25, Seki describes that the target frame or at least one of frames is at least one of a previous frame in time or a subsequent frame in time with respect to a reference frame which should have been naturally outputted by said image data output unit from said image memory (¶0006 lines 6-7: "*…all of the consecutive images over a prescribed time are set*

side-by-side in time to form a three-dimensional time-space image…", *where the frames are successively located along a time axis, enabling a particular frame that is presently analyzed to have a frame from the past in reference to a current frame*).

Regarding claim 26, Seki describes that for each in-picture position of the images contained in the target frame, the image conversion unit or processor adds a predetermined pixel value in accordance with an attribute value thereof (¶0016 lines 3-7: "…*cutting of the initial time-space image is performed in all directions…the cutting plane is made of a helix plane along the movement trace of the object, and this plane completely contains the movement vector of the object, and it contains all of the information about the movement trace.*", *where a predetermined cut is performed on the surface containing a position, or pixel value, within the frames to track the movement of the object in accordance with an attribute value, such as the specified time interval of the frames*, ¶0011 lines 1-5: "…*a camcorder is used to take the consecutive images…as the images at an instant (11, 12, 13) shown in Fig. 2 are represented as I(x, y) with the orthogonal coordinates of X-axis and Y-axis, all of the images obtained are set side-by-side in time sequence.*").

Regarding claim 28, Seki describes an attribute value is a depth value (¶0011 lines 5-7: "…*there is a time axis (T-axis) perpendicular to both X-axis and Y-axis, by setting the images along this axis, it is possible to construct the three-dimensional image shown in Fig. 3, that is, time-space image I(x, y; t).*", Fig. 3).

Regarding claim 32, Seki describes an attribute value is a value that indicates a degree of change of an image area in time (¶0016 lines 3-7: "…*cutting of the initial time-space image is performed in all directions…the cutting plane is made of a helix plane along the movement trace*

of the object, and this plane completely contains the movement vector of the object, and it contains all of the information about the movement trace.").

Regarding claim 34, Seki describes the attribute value is a pixel value (¶0012 lines 1-2: "*...a portion of the image of moving object (21) contained in the original consecutive images must appear as the trace...only the portion containing angle θ_d is extracted from each cross-sectional image C(d, t; θ), and a new image is formed.*", *where the position of the pixel with the image frame is tracked over a time interval*).

Regarding claim 36, Seki describes acquiring, as moving pictures, images shot by a camera and sending image to image memory (¶0011 lines 1-2: "*...a camcorder is used to take the consecutive images that are input to an image processor.*", *where the teachings of Seki provide an image input unit which acquires, as the original moving pictures, image shot by a camera and sends the images to a camcorder, thereby containing an internal image memory*).

Claims 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Yamamoto in further view of Fels et al.(hereinafter "Fels", "*Techniques for Interactive Video Cubism*").

Regarding claim 37, Seki and Yamamoto fail to teach a setting input unit which acquires, via a user operation, input of a setting value used to determine the at least one of frames, wherein said image conversion unit determines the at least one of frames according to the setting value acquired by said setting input unit. Fels teaches a setting input unit and image conversion unit (sec. 1 1st ¶ lines 1-3: "*Using the mouse as a virtual trackball, the user is able to rotate or translate the entire scene, the video cube, or the cut plane.*", *where a plane which corresponds*

with an associated frame, as shown in Fig. 1, may be selected by user input, thereby enabling one skilled in the art to understand that the input capabilities provided to the user has a functionally equivalent setting input unit, as well as an image conversion unit to process the displayed images, which acquires, via user operation, input of a setting value used to determine the at least one of frames, as disclosed in sec. 1 1st ¶ lines 1-3: "*Using the mouse as a virtual trackball, the user is able to rotate or translate the entire scene, the video cube, or the cut plane.*"), where the image conversion unit cuts the box space by the surface defined by a function of the setting value acquired by the setting input unit (sec. 3.3.1 lines 1-2: "*The cut plane allows the user to move a planar window inside the video cube and examine the corresponding imagery…*", *where the three-dimensional surface is cut by a plane, Fig. 3, in which the teachings of Seki provide processed images that are therefore displayed and obtained using a functionally equivalent image conversion*), therefore it would have been obvious to one of ordinary skill in the art to modify the captured frames generated by Seki and alpha value synthesis of Yamamoto with the interactive frame interaction provided by Fels because this modification would provide the ability to accurately display successive frames of animation or video collectively in a three-dimensional format in which the user may interactive with the data to define a plane by which to cut the surface of the data to define a synthesized representation of the change of the images or frames over a time interval with respect to an alpha value thereby enabling temporal analysis of the data.

Regarding claim 38, Seki describes a curve that indicates a relation between coordinates of points contained in the two-dimensional images and time values thereof and a variable of the function is displayed on a screen (¶0012 lines 1-11: "*On said cross-sectional image $C(d, t; \theta)$, a*

portion of the image of moving object (21) contained in the original consecutive images must appear as the trace…the object trace on said cross-sectional image C(d, t; θ) at a certain time is determined…This is called trace cross-sectional image L(s, θ; t), and it is found that this image becomes a place containing the velocity vector of the moving object…this trace cross-sectional image L(s, θ; t) is an image obtained by cutting said time-space image I(x, y; t) with a helix plane along the movement direction of the object.“, Fig. 5). However, Seki and Yamamoto fail to teach a setting input unit and a setting value. Fels teaches that the input capabilities provided to the user have a corresponding input unit, therefore the provided input (sec. 1 1st ¶ lines 1-3: “*Using the mouse as a virtual trackball, the user is able to…translate…the video cube, or the cut plane.*“ and sec. 3.3.1 lines 1-2: “*The cut plane allows the user to move a planar window inside the video cube and examine the corresponding imagery…*“, *in which the teachings of Seki thereby provide functionally equivalent setting of input to provide a value defining the cut surface, Fig. 4*), therefore it would have been obvious to one of ordinary skill in the art to modify the captured frames generated by Seki and alpha value synthesis of Yamamoto with the interactive frame interaction provided by Fels because this modification would provide the ability to accurately display successive frames of animation or video collectively in a three-dimensional format in which the user may interactive with the data to define a plane by which to cut the surface of the data to define a synthesized representation of the change of the images or frames over a time interval with respect to an alpha value thereby enabling temporal analysis of the data.

Regarding claim 39, Seki describes that based on coordinates of characteristic points in the two-dimensional images, the image conversion unit, or image processor, cuts the box space

by a curve defined by a function of the coordinates of the characteristics points (¶0012 lines 1-11: "*This is called trace cross-sectional image L(s, θ; t), and it is found that this image becomes a place containing the velocity vector of the moving object. That is, this trace cross-sectional image L(s, θ; t) is an image obtained by cutting said time-space image I(x, y; t) with a helix plane along the movement direction of the object* ", *Fig. 5*). However, Seki and Yamamoto fail to teach a setting input unit and a setting value. Fels teaches that the input capabilities provided to the user have a corresponding input unit, therefore the input (sec. 1 1st ¶ lines 1-3: "*Using the mouse as a virtual trackball, the user is able to...translate...the video cube, or the cut plane.*" and sec. 3.3.1 lines 1-2: "*The cut plane allows the user to move a planar window inside the video cube and examine the corresponding imagery…*", *in which the teachings of Seki thereby provide functionally equivalent setting of input to provide a value defining a certain portion of the cut surface, Fig. 4*), therefore it would have been obvious to one of ordinary skill in the art to modify the captured frames generated by Seki and alpha value synthesis of Yamamoto with the interactive frame interaction provided by Fels because this modification would provide the ability to accurately display successive frames of animation or video collectively in a three-dimensional format in which the user may interactive with the data to define a plane by which to cut the surface of the data to define a synthesized representation of the change of the images or frames over a time interval with respect to an alpha value thereby enabling temporal analysis of the data.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki in view of Yamamoto in further view of Okajima (US 2002/0122037).

Regarding claim 41, Seki teaches recording, in sequence, original moving pictures for each frame, determining, for each in-picture position of an image contained in a target frame (¶0012 lines 1-2 and 8-11: "*On said cross-sectional image C(d, t; θ), a portion of the image of moving object (21) contained in the original consecutive images must appear as the trace…this trace cross-sectional image L(s, θ; t) is an image obtained by cutting said time-space image I(x, y; t) with a helix plane along the movement direction of the object. This plane completely contains the information pertaining to the movement of the object…*", *wherein for the successive frames, the position of an object in image is tracked, Fig. 4*), a plurality of frames at predetermined time intervals from the frames recorded in said image memory (¶0013 lines 1-2: "*…all of the consecutive images within a prescribed time are obtained beforehand.*", *where fames are captured over a predetermined time interval, therefore the time intervals between the frames is predetermined, Fig. 2*),

wherein said image conversion unit reads out, from the plurality of frames, data that correspond to the in-picture position and synthesizes the data in a ratio according to an attribute value (¶0012 lines 1-2 and 6-11: "*…a portion of the image of moving object (21) contained in the original consecutive images must appear as the trace…This is called trace cross-sectional image L(s, θ; t), and it is found that this image becomes a place containing the velocity vector of the moving object…This plane completely contains the information pertaining to the movement of the object…*", *where a certain region from all the frames is captured, as shown in Fig. 4, where an attribute value, such as the proportional difference in the position of the object over time, is tracked and presented in a synthesized image that displays the movement of the object over a time interval, Fig. 5*), and

wherein said image data output unit sequentially outputs the synthesized and reconstructed image data along a time axis (¶0015 lines 1-5: "*When there are plural moving objects in the cross-sectional images, plural groups of the cross-sectional images are prepared corresponding to the respective objects, to get the trace cross-sectional image for each object.*" and ¶0012 lines 1-2 and 8-11: "*On said cross-sectional image C(d, t; θ), a portion of the image of moving object (21) contained in the original consecutive images must appear as…an image obtained by cutting said time-space image I(x, y; t)…This plane completely contains the information pertaining to the movement of the object…" and is illustrated in Fig. 3: axis T, in which output of several synthesized images is provided to enable a user to animate the movement of several objects in a sequence of images across the time axis T through generation of several synthesized images for each group that corresponds to an object in sequence of images, whereby a special effect may then be visualized showing the movement of several objects present in the sequence of images*), however Seki fails to teach a computer readable medium encoded with a computer program, synthesizing the first data with the first target frame to be output at an alpha value and synthesizing the second data with the second target frame to be output at an alpha value. Yamamoto teaches synthesizing the first data with the first target frame to be output at an alpha value and synthesizing the second data with the second target frame to be output at an alpha value (col. 17 lines 14-16: "*…the first image 201 and generated second image 202 are synthesized using the value α to produce a third image…", in which a first image, or first target frame, and data for a second image, or second target frame, are synthesized at an alpha value*). However, Seki and Yamamoto fail to teach a computer readable medium encoded with a computer program. Okajima teaches a computer readable medium encoded with a computer

program (¶0043 lines 4-5: "*...program recorded in a storage medium...*"). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the image synthesis processing of Seki and alpha value synthesis of Yamamoto with the computer readable medium of Okajima because this modification enables execution of the synthesized images on a variety of computer systems through storage of the program or software utilized to implement the image alpha value synthesis on a memory that ensures portable and transferable execution of the stored computer software on a medium readable by a computer.

Response to Arguments

Applicant's arguments with respect to claims 1-14,17,22 and 24-41 have been considered but are moot in view of the new ground(s) of rejection.

The 35 U.S.C. 101 rejection of claims 1-3 has been withdrawn due to the amendments to claim 1 to provide statutory subject matter.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAID BROOME whose telephone number is (571)272-2931. The examiner can normally be reached on M-F 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Said Broome/
Examiner, Art Unit 2628